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A Multiple Evaporator for General Chemistry

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A Multiple Evaporator For General Chemistry

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Many experiments require a hood due to the evolution of hazardous fumes. One such experiment involves the use of nitric acid in the determination of combining ratios of certain metals, e.g., tin and oxygen. Where large classes are the rule, as in general chemistry, and the number of fume hoods is limited, the progress of the class is slowed considerably if individual set-ups are used.

A simple and inexpensive multiple evaporator has been described.[1] It consists of an iron sand bath (without the sand), on which is placed a piece of asbestos board with holes cut out to accommodate several crucibles. Instead of an asbestos board, a desiccator plate with appropriately sized holes may be placed in the sand bath. The assembly is put on a tripod and heated at a suitable temperature. The reaction is completed over a free flame. Several assemblies in one hood may be enough for all of the evaporations for a class of 24 to be carried out simultaneously.

Note: Before this procedure is used by a class, the exact details should be worked out for the specific experiment.

[1]Hillebrand, W.F., Lundell, G.E.F., Bright, H.A., and Hoffman, J.I., "Applied Inorganic Analysis," 2 nd Ed, John Wiley & Sons, New York, 1953, p25.

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Wood Won't Work

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Electric power plants are rated in terms of megawatts of electric power. A 1,000 megawatt power plant will produce the electric needs for about one million people.

Coal will release about 10,000 Btu of energy per pound. It takes about two pounds of wood to release 10,000 Btu. To fuel a 1,000 megawatt power plant it would take:

$$1000\ \text{MW} \times \frac{1000\ \text{KW}}{\text{MW}} \times \frac{24\ \text{hrs.}}{\text{day}} \times \frac{0.001\ \text{tons of wood}}{\text{KW hr}} \times \frac{24{,}000\ \text{tons}}{\text{day}}$$

If one averaged about 2.2 tons of harvestable wood per acre, 10,909 acres of timber would be needed each day or 3.9 million acres of timber per year. The Coconino National Forest is 1.8 million acres, enough for 156 days. It wouldn't take long to burn all of our National Forests. Then we could wait another 100 years for them to grow back?

Ref: Why not wood? *Arizona Energy Education.* 1982. Vol.4(2):11.